Table 11.2 Summary of Remedial Alternatives

Criteria	Alternative 1 Interim Measures, No Action	Alternative 2 Interim Measures, Close Heap Leach Pads in Place	Alternative 3 Interim Measures, Clean Close Heap Leach Pads in Place, Alternative 3a – Pit Repository	Alternative 4 Interim Measures, Off-Site Removal, Haul to Landfill	Alternative 5 The 4EM Proposal
Overall Protection of Human Health and the Environment	No. Not protective. Exposure and offsite release potential to contaminants would remain.	Yes. Reduction of solution inventory. Draw down and evaporate solution in Pad No. 2. Cap pads with low permeability cover, manage drain down 5-yr. post capping, and reclaim PSP.	Yes. Reduction of solution inventory. Treat pads in place with bioremediation treatment to comply with discharge criteria. Shaping heap leach pads and capping with low permeability capping system. 5-yr. water management post capping, reclaim PSP. Alternative 3a - haul pad material to open pit for disposal after treatment. Secondary treatment applied as pad material deposited in pit. Reduce solution inventory. Immobilize metals, detoxify cyanide and nitrates.	Yes. Reduction of solution inventory. Contents of pads and ponds hauled to licensed solid waste landfill. Pad and PSP disturbance footprints reclaimed.	Yes. Reduction of solution inventory. Contents of pads utilized as concrete additive and hauled from site. Pad and PSP disturbance footprints reclaimed. Additional specific detail needed regarding method and timeframe to achieve waste discharge requirements.
Compliance with ARARs	No. Does not comply with ARARs	Closure of the pads in place would be technically and administratively feasible. Contract services and material vendors are available within region. Community acceptance will reflect public comments on EE/CA document.	Clean closure of the pads in place would be technically and administratively feasible, as would the construction of a repository in the pit. Contract services and material vendors are available within region. Community acceptance will reflect public comments on EE/CA document.	Yes. Complies with ARARs. Mitigation measures for listed species to be negotiated.	Compliance with ARARs to be negotiated with DOI/NPS regarding 36 CFR Ch. 1, Part 6 requirements and mitigation measures for listed species.
Long-term Effectiveness and Permanence	No. Not effective at minimizing risks.	Yes. Solution reduction through evaporation and low permeability cap to provide long-term protection as long as integrity of caps maintained.	Yes. Solution reduction through evaporation. Solution toxicity neutralized through bioremediation. Secondary bioremediation treatment of pad material as placed in pit and low permeability cap to provide long-term protection as long as integrity of cap maintained.	Effective. Solution reduction through evaporation. Constituents of concern removed to approved landfill for permanent disposal. Disturbance footprints reclaimed at site.	Effective. Solution reduction through evaporation. Constituents of concern removed by creation of finished posslan product. Shipment of product removes it from the site for distribution. Disturbance footprints reclaimed at site.
Reduction of Toxicity, Mobility or Volume through Treatment		Yes. Solution volume reduced through evaporation. Addition of meteoric water reduced through capping system.	Yes. Solution volume reduced through evaporation. Addition of meteoric water reduced through capping system. Bioremediation treatment of the pads in place and,	Yes. Potentially toxic materials would be hauled from the site to licensed solid waste landfill.	Additional specific detail needed regarding method and timeframe to achieve waste discharge requirements. Solution volume reduced through evaporation. Reduction of cyanide levels in Pad No. 2.

			with Alternative 3a, as material is placed in pit.		
Short-term Effectiveness	Yes. Implementation of Interim Measures may impede release for unknown length of time; however, meteoric water would continue to be added to volume. Risk from catastrophic slope failure would continue to increase.	Yes. Implementation of Interim Measure to provide solution reduction for short term. Installation of infiltration reduction cap to significantly reduce volume of future increase due to meteoric water.	Yes. Implementation of Interim Measure to provide solution reduction for short term. Installation of infiltration reduction cap to significantly reduce volume of future increase due to meteoric water.	Yes. Implementation of Interim Measure to provide solution reduction for short term. Potentially toxic materials would be hauled from the site.	Yes. Implementation of water management to provide solution reduction for short term. Potentially toxic materials would be hauled from the site. Additional details regarding safeguards to human health and the environment from potentially harmful pad and solution constituents.
Implementability	N/A. Only Interim Measure would be implemented. Not intended to be considered as a removal alternative. Interim measures are technically and administratively feasible. Contract services and material vendors are available within region. Community acceptance will reflect public comments on EE/CA document.	Closure of the pads in place would be technically and administratively feasible. Contract services and material vendors are available within region. Community acceptance will reflect public comments on EE/CA document.	Implementability to be negotiated with DOI/NPS regarding compliance with 36 CFR Ch. 1, Part 6 and mitigation measures for listed species.	Yes. However, pumping and evaporating solution inventory could take two to several years. Cost is probably prohibitive.	Implementability to be negotiated with DOI/NPS regarding compliance with 36 CFR Ch. 1, Part 6 and mitigation measures for listed species. Pumping and evaporating solution inventory could take two to several years. Work plan schedule for use of pads and PSP areas is 10 years. Cost for reclamation of remainder of MSM site to be covered by escrow fund. Total at end of operation - $1,000,000
Cost	Cost to implement Interim Measure plus 30 years of inspection and maintenance. $505,754	Draw down and evaporate solution in Pad No. 2, regrade and cap heaps with low permeability cap, 5 yr. water management, reclaim PSP $2,625,956	Rinse and evaporate solution inventory, bioremediation treatment, regrade and cap heaps with low permeability cap, 5 yr. water management, reclaim PSP $2,914,809 Option – Alternative 3a – pit repository, Backfill pit with waste rock to 10 feet above water elevation, haul pad material after rinsing and bioremediation in place, second treatment as placed in pit, low permeability cap on material in pit, reclaim heap foot prints, revegetate pad and pit areas, reclaim PSP $4,977,694	Draw down and evaporate solution in Pad No. 2, load and haul pad material to approved landfill. Reclaim pad and PSP footprints. $150,421,016	The construction cost of the 4EM proposal has not been disclosed. MNP has the statutory authority to impose a construction bond and a fee per ton per mile within park boundaries to offset potential damage to roads. Additional verification and monitoring data would be required from 4EM regarding off site transportation and use. A separate environmental analysis of the 4EM proposal would be required prior to startup and all pertinent permits obtained. Revenue estimate from 4EM $1,000,000